Zooplankton resting stages in the Scheldt estuary: is the CRC Lippenbroek a zooplankton refuge?

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Restoration of estuarine intertidal areas is mainly aimed at reducing flooding risk and favoring biogeochemical exchange between the watercourse and the marches. The recently developed concept of controlled reduced tidal systems (CRCs) such as the Lippenbroek in the Scheldt, provide environmental conditions close to natural circumstances, but somewhat more sheltered. While pools on tidal marches are known as nursing areas for many pelagic organisms, little is known about the potential of CRCs to harbor zooplankton organisms or their resting stages.

In this study, we have investigated the abundance of zooplankton in the water of the CRC Lippenbroek, as well as the abundance of resting stages in the sediments and compared these with abundances found in the main channel of the Scheldt and the outer dike marches.

For the pelagic sampling, 50 L of water were filtered through a 50 µm plankton net and the collected zooplankton preserved n 4 % final concentration formalin. 7 cm cores were taken at several elevation levels within the CRC and in muddy and coarse outer dike sediments.

Cores covered 90 ml with filtered Scheldt water were incubated in the laboratory at 18 °C, a 14 h photoperiod and the overlaying water sampled daily during 30 days for resting stages. The results show a spatial heterogeneity of both zooplankton abundance and resting stages within the Lippenbroek. Resting stages are more abundant at low elevation in the CRC than in the outer dike sediments.

These results highlight yet another function of CRC's: they represent sanctuaries for zooplankton.